FY06 Safety & Mission Assurance Directorate Accomplishments

Shuttle and Return-to-Flight Activities

- Successful flights of STS-121 and STS-115
- Played a critical role in the redesign, analysis, and testing of the External Tank, the development and review of Failure Modes and Effects Analyses/Critical Items Lists and hazard reports, and in all of the design and certification reviews.
- Developed and defended the MSFC S&MA "no-go" position on the controversial STS-121 Ice/Frost Redesign issue. Position was supported by Bryan O'Connor, Office of Safety & Mission Assurance Chief Safety Officer.
- Provided critical SR&QA support to essential MSFC-responsible return-to-flight tests. Specific testing included RCC crack repair, ET RTF design changes such as PAL Ramp removal, Ice Frost Ramp, ECO sensors, and ET Attach Ring Camera).
  - Provided S&MA Leadership for the Reinforced Carbon-Carbon On-Orbit Crack Repair (ROCR), successfully qualified the ROCR crack repair kit as a contingency repair capability, and it flew on STS-121
- Chaired the STS-114 ET In-Flight Anomaly Investigation Team, and had S&MA representatives on all of the associated sub-teams. Also served as OSMA Ex-Officio member on the ET Tiger Team.
- HEI now supporting several off-site Resident Management Offices
- Successfully completed JSC Quality Audit against the Space Shuttle Program Government Quality Assurance Program (NSTS 60538) for SSME, SRB and RSRM.
- Completed NEQA for RSRM and SRB.
- Provided Quality Assurance support for literally hundreds of tests for Space Shuttle development and qualification testing for RTF, including inspections:

Constellation & CLV

- Level 2
  - MSFC S&MA hosted the Constellation Program SR&QA requirements Technical Interchange Meeting where representatives from across agency met to define the S&MA requirements that will be levied on the program.
  - Also hosted 3 other TIMs – PRACA, Fault Tree Analysis, and Preliminary Hazard Analysis – received accolades from Level 2 SR&QA Manager (Lauri Hansen)
- Level 3
  - Significant amount of document reviews, trade studies, analyses, meetings
  - **All** MSFC S&MA CLV SRR products have been delivered on time or ahead of schedule, and those remaining are scheduled for completion within the agreed-upon dates.

- Operability, Design, and Analysis (ODA) activities (formerly known as Risk Based Design (RBD))
  - S&MA heavily involved in ODA Integration Group, including taking leadership roles in the 3 working groups under the Reliability and Maintainability Panel.
    - CLV Functional Failure Modes and Effects Working Group, Reliability, Maintainability and Supportability WG, and Logic Model WG.
- "Design for R&M Panel" activities - developed CLV Functional FMEA and the Reliability Analysis Report for the SRR Data Package
- "Design for Safety Panel" activities include development of Safety Analysis Report (SAR), completion of Functional Fault Tree Analysis (FTA), and Hazard Analysis Working Group completed the analysis of the CLV Reaction Control System (RCS) as a test of the newly developed Fault Tolerance evaluation process. All issues/concerned were documented and integrated with other discipline inputs.
- Robotic Lunar Exploration Program Office transferred from Ames Research Center (ARC) to MSFC; new MSFC office is titled Lunar Precursor and Robotic Program (LPRP) Office – S&MA responsibilities transferred to MSFC as well
- MSFC S&MA named as the Lead for Launch Abort System (LAS) S&MA
- Provided S&MA leadership to the NESC-led Smart Buyer's Team for the design of the CEV-Launch Abort System. S&MA efforts were well appreciated by agency-level senior management.

International Space Station

- Microgravity Science Glovebox (MSG)
  - Conducted Recertification Technical Interchange Meeting (TIM) with PSRP which resulted in full approval of recertification plan
  - MSFC S&MA championed MSG Recertification Safety Package through the Payload Safety Review Panel – a critical milestone in efforts to provide replacement parts to the MSG and return to full operation onboard the Space Station.
- Oxygen Generation System (OGS)
  - Successfully performed the first formal ISS Physical Configuration Audit (PCA) on MSFC in-house fabricated flight hardware.
  - All S&MA deliverables were completed on time to facilitate early delivery of the MSFC-provided ECLSS Oxygen Generating System to the International Space Station.
- ECLSS – CS and HEI inspectors working long hours and weekends, making up lost schedule time. Todd May has expressed appreciation for inspector efforts

Industrial Safety

- MSFC Lost Time Incident Rate (LTIR) currently at 0.10 for FY06 – significant improvement over FY05, and one of the best on record for MSFC
- Zero Type A or B mishaps to-date in FY06 – had one of each in FY05
- Current metrics trends are indicating final FY06 measures will surpass all previous years (surpass being a positive thing)
- Developed and implemented an innovative Safety and Health Training assessment system for MSFC managers. This web-based application provides them with a simple tool for use in determining what type of safety training is required by their personnel.
- Co-championed a Center-wide Lean Six Sigma effort tasked with improving Safety and Health reporting processes (SHEtrak, SCRS, and IRIS). Innovations resulting from improvements identified in the effort helped dramatically streamline, simplify and improve numerous reporting processes.
- Participated in a Purchase Request Kiazen which modified and streamlined the Center's methodology for inputting PR's.
- Supported the DART Mishap Investigation Board
- Provided Deputy Chair for the KSC Fatality Mishap Investigation Board
- Provided members for the NASA-3 Mishap Investigation Board

Personnel

- S&MA headcount currently at 155 people (end of FY06) - was at 145 (FY05).
- Number of GS-15 positions in QD increased by 6
- Three fourths of S&MA moved to new locations including all HEI employees moving out of 4471.
- S&MA employee satisfaction survey (civil service) showed improvements in 15 out of the 19 categories over previous year.
    - Results of survey will be factored into update of S&MA Strategic Plan update next month
- Created a detailed vacancy tracking system which provides the Director and the managers with a detailed status of actions completed and pending, with regard to the internal and external hiring process.
- Obtained additional resource personnel to provide S&MA Department Managers with the capability and support necessary for them to be able to plan and manage their own budgets. Previously controlled at the Directorate level, this effort marked the first time that S&MA Department Mangers have been given the opportunity to manage and be accountable for their own budgets.

Communications and Teamwork

- Instituted numerous new activities to further enhance communications within the S&MA Team. Examples include the creation of bi-weekly one-on-one meetings with direct reports and weekly morning telecon tag-ups with the senior S&MA management team. Continuing with brown bag lunches as well.
- S&MA Director and Director of Engineering meet routinely to further develop S&MA – Engineering relationships and cooperation. The current partnering relationship between S&MA and Engineering is the best it has been in recent history.

Other Accomplishments

- Hosted agency Aerospace Safety Advisory Panel (ASAP) visit to MSFC. Panel members commented that the MSFC visit was one of the best that the team had had at any Center.
- Hosted NASA Exploration Safety Study (NESS) team visit and subsequent visits by NESS sub-teams. Several MSFC S&MA employees served on some of the sub-teams. NESS study team (also known as Fragola Team) identified several agency-level S&MA areas for improvement, many of which MSFC S&MA had already corrected or was in the process of correcting.
- Hosted NASA HQ-sponsored Ultra-reliability workshop with participation from various NASA Centers and NASA Contractors.
- MSFC Center Management approved a pilot project worth about $ 0.5 Million to help improve S&MA and Engineering Skill levels and processes.
- Implemented a new S&MA Board process (with Engineering participation), that provides a top-level insight into key technical issues by the MSFC S&MA community to help formulate our position to be communicated to the Center and pgms/projs.
    - Serving as a member of the Engineering Directorate's Engineering Management Council (EMC).
- Implemented a new S&MA Peer Review Process (PRP) which leverages S&MA Directorate discipline and functional experts in the review of significant S&MA products (e.g., S&MA Plans, analyses, etc.).
- Identified and championed creative changes to the S&MA support contract during Contract re-compete efforts to ensure corrective action to longstanding contract issues. For example, new contract will incorporate an innovative 10-year award fee/award term incentives package – first of its kind for a NASA S&MA contract – required a HQ-approved deviation to the 5-year limit on contracting.
- S&MA is providing SEB chair and several members and evaluators. RFP for the MSFC S&MA Services Contract re-competition was issued on 5-31-06, and proposals are currently under evaluation by the SEB.

- Supported the Agency SEB and helped to successfully downselect the Contractor for the NASA Contractor Assurance Supplier
- Participated in or led the following Independent Assessments. Provided recommendations for process improvements:
    - STS-114 In-Flight Anomaly Foam Lost Investigations
    - Space Station Program ECLSS Oxygen Generation System
    - ECLSS Urine Process Assembly
    - PA&R of RSRM project
    - PA&R of SRB Procurement Quality System
    - Discovery Program DAWN Project.
- Taught approximately 153 students the principles of Continuous Risk Management
- Completed PDRM for Quality Assurance and Quality Auditing Discipline
- Completed 8 organizational internal audits
- Completed the Center-wide Environmental Management System Audit
- Completed 4 Resident office internal and external registration audits (MAF, SSC, ATK, KSC)
- Successfully supported the MSFC external registration audit by NQA
- Provided the Audit Tracking Investigation System (ATIS) software to OSMA for their audit tracking tool and completed required training
- Assisted Engineering Software Branch in achieving CMMI Level II